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Worldwide Report

ENVIRONMENTAL QUALITY

No. 268

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BRIEFS

GIPPSLAND MINING DANGER--Massive increases in brown coal mining in the Latrobe Valley could destroy the environment of central Gippsland, according to a University of Melbourne researcher. Mr David Evans, a reader in the centre for environmental studies, said yesterday that some authorities were still predicting a growth in coal mining in the valley of six percent a year. He told a meeting of the Graduate Union that this would bring levels of environmental stress that the valley could not sustain. "After 30 years the rate of mining coal would be 600 million tonnes a year; that is 20 times the present rate,' Mr Evans said. "We would be mining every year the total quantity we have used to date in 60 years of operations. That is pretty staggering." Mr Evans said this rate of expansion would see the construction of six new power stations the size of the Loy Yang station now taking shape at Traralgon, and eight coal-to-oil conversion plants. [Text] [Melbourne THE AGE in English 7 Aug 80 p 17]

MURRAY RIVER WATER--Adelaide--The South Australian Water Resources Minister, Mr Peter Arnold, yesterday renewed his call for a water quality standard for the Murray River. Speaking on his return from a month overseas to study irrigation and salinity control, Mr Arnold said the standard was essential for the survival of South Australia. Minimum levels of salinity and other pollutants in the river would be fixed, guaranteeing South Australia an acceptable standard of water for irrigation and domestic use. [Text] [Sydney THE SYDNEY MORNING HERALD in English 7 Aug 80 p 9]

CSO: 5000

ENVIRONMENTAL PROBLEMS CAUSED BY PAST NEGLECT

Kuala Lumpur NEW STRAITS TIMES in English 18 Jul 80 p 6

[Text]

KUALA LUMPUR, Thurs. — Industries must continue to help the Government in its efforts to curb pollution and to forestall future environmental problems, Science, Technology and Environment Minister Tan Sri Ong Kee Hui said here today.

"The environmental problems of today are mostly caused by past neglect of environmental issues and concerns," he said.

He said while the Government encouraged the expansion of industrial projects, ways must be taken to ensure that industries minimise any adverse impact on the environment.

Tan Sri Ong was opening a one-day seminar on environmental control in the iron and steel industries organised by the Malaysian Iron and Steel Industries Federation (MISIF).

It was attended by 65 participants.

Well-being

He said air pollution was affecting a number of urban areas.

"Long-term quality data collected in Petaling Jaya and Kuala Lumpur indicates suspended particulates exceeding levels conducive to residential living.

"Short-term monitoring programmes also showed high levels of air pollution in major industrial and urban areas like Penang, Prai, Johore Baru and Tampoi.

"Environmental pollution affects the health and well-being of our people apart from effects on the quality of life.

"The silting of Ranau Valley padi fields caused by the Mamut copper mine had led to the resettlement of 600 affected families at a cost of $12 million and about $37 million in pollution control measures," Tan Sri Ong said.

He said oil tanker accidents also caused oil spills and disrupted the livelihood of fishermen in the Straits of Malacca in 1975 and 1976.

He said industrial effluents in the Juru River of Penang, the heavy pollutants in Sg. Sekudai in Johore and the dust pollution problem caused by the Batu Caves quarry here were examples of the damage that could take place if environmental issues were neglected.

Apart from regulations gazetted under the Environmental Quality Act, the Ministry was also preparing guidelines to help planners and implementors in incorporating environmental factors in their work.

He said among these were guidelines on the siting and zoning of industries which had been adopted by the National Land Council for implementation by State authorities.

The Ministry had also developed a set of guidelines for the disposal of solid waste on land, Tan Sri Ong said.

He also said his Ministry had prepared a Handbook on Environmental Impact Assessment to help project planners identify any potentially significant impact on the environment of their projects so that action could be taken to minimise the adverse effects.

Earlier, addressing the seminar, the chairman of MISIF, Encik Abdul Halim Rejab, urged the Government to grant the iron and steel industry tax relief on capital investment to help it to meet the requirements for anti-pollution equipment.

He said pollution control equipment could amount to about 30 per cent of the total cost of a steel project and any tax exemptions to the industry for installing such equipment would help to ease the financial burden of steel millers.

CSO: 5000

IMPORTANCE OF ENVIRONMENTAL PROTECTION DISCUSSED

HK300542 Beijing RENMIN RIBAO in Chinese 22 Aug 80 p 1

[Article by commentator: "Pay Close Attention to Rural Environmental Protection"]

[Text] Following the increasing development of commune-run industries in the rural areas, the problem of rural environmental pollution has gradually come to the fore. From time to time this paper has received letters from commune members reflecting that some factories (including commune-run and state-owned factories) have willfully disposed of poisonous and contaminated water, poisonous gas and other harmful matter. These wastes have polluted water, damaged farmland and caused the crops to wither, thus bringing harm to human beings and animals alike. The views aired by the peasants merit the close attention of relevant departments.

With many areas engaged in the simultaneous development of agriculture, sideline production and industry in recent years, commune-run industries have achieved very rapid gains. This is a good thing because it has made the countryside prosperous. However, it has also brought about new problems of environmental pollution. Neglecting the proper disposal of the "three wastes" in some areas has often resulted in the pollution of a large area after a factory has been set up. If this development is allowed to continue, it will undermine the natural environment in the countryside and seriously affect the development of agriculture, forestry, livestock breeding, sideline production and fishery. It will affect the peasants' health and the development of rural industries.

Some comrades have not paid sufficient attention to the pollution problem in the rural areas. They believe that densely populated cities should pay attention to and solve this problem, and that in the broad countryside where the population is scattered and factories are not concentrated, it does not matter if contaminated water and things are drained away. This view is incorrect. Since the development of industrial and agricultural production has brought cities and the countryside much closer, the problem of rural pollution, if not handled properly, will affect the countryside as well as the cities. For example if contaminated farm produce and subsidiary products are taken to the cities, urban consumers will suffer from the effects of pollution. In preventing pollution, it is necessary to pay close attention to cities without losing sight of the countryside.

Some comrades say that since commune-run industries start from scratch and are operated with small capital for small profit, they cannot afford to properly dispose of the "three wastes." Although disposing of the "three wastes" does involve the expenditure of manpower and material resources, what is harmful can be made beneficial if it is handled properly, such as benefiting the peasants as well as the enterprises themselves. The report on some commune-run enterprises in Yinggou County, Liaoning, which appears elsewhere in this paper today, provides convincing evidence of how the environment of these enterprises has been cleansed and their revenue on the increase after the "three wastes" have been properly disposed of.

In the case of dealing with pollution, naturally some units have to exert considerable effort, without getting direct economic benefits or receiving much profit. Even if such is the case, no efforts should be spared to do it. In tackling environmental pollution, the question of whether it is beneficial or must be viewed from the interests of society as a whole and not from the local interests of the units themselves. Protecting the natural rural environment from becoming contaminated is a matter of major importance affecting the wellbeing of our posterity. This brooks no laxity nor irresponsible recklessness.

The "PRC environmental protection law (tentative)" was promulgated last year. This is important legislation for safeguarding the natural environment of urban and rural areas and for promoting the four modernizations, a law to be strictly observed by all units. The prevention and treatment of environmental pollution must be considered an important matter and arrangements made accordingly when new factories and enterprises are set up in the countryside. Giving consideration only to production and not to the disposal of the "three wastes" should be avoided. Those units which have caused serious pollution at the expense of the peasants' health and production should be held responsible according to law. Some factories in Zhebo Municipality, Shandong Province, willfully drained off poisonous and contaminated water to adjacent farmland, causing more than 30,000 mu of wheat to wither and curtail output. Recently, the Zhebo Municipal People's Government dealt with the matter strictly according to law. It urged concerned factories to compensate the communes and production brigades for their losses. In addition, the local authorities set a time limit whereby the factories involved were to attend to the matter or stop production until the pollution problem was solved. It is entirely necessary to do so. In order to effectively stop the spread of pollution and insure that the people have a congenial environment for living and working the environmental protection work for cities and the countryside must strictly observe the rule of law so that everything is based on law and that lawbreakers will be prosecuted.

LEADERSHIP URGED TO GIVE ATTENTION TO PROTECTING AGRICULTURAL ENVIRONMENT

Tianjin TIANJIN RIBAO in Chinese 26 Mar 80 p 1

[Article: "Protecting the Agricultural Environment Should Be the Concern of the Whole Society"]

[Text] "Since the agricultural environment is an important part of man's living environment, the quality of the agricultural products from this environment directly affects the people's health. For this reason, protecting the agricultural environment should be a topic on the agenda of the leadership." Such is the call emanating from the delegates attending the National Conference on Environmental Quality Survey of Important Waste Water Irrigation Districts in China, held from March 18-22 in Tianjin.

Sponsored by the Ministry of Agriculture, this conference was called by the Institute of Research and Monitoring of the Ministry's Environmental Protection Division. Participating were the Environmental Protection Office under the State Council, the Bureau of Science and Technology of the Ministry of Agriculture, the Institute of Forestry and Pedology of the Chinese Academy of Sciences, the Institute of Vegetable Crops of the Chinese Academy of Agricultural Sciences, various agricultural, environment protection, health, and urban development agencies and research sections located in the chief waste water irrigation districts in China, and representatives from various universities and technical colleges.

Survey data from various localities presented at the conference showed that treated sewerage from the cities makes a valuable fertilizer resource that could be rationally used to irrigate planted fields to result in obviously greater yields. Furthermore, soil microorganisms have a definitely purifying effect on toxic substances contained in the sewerage. However, of concern is the contamination of soil, underground water sources, and agricultural and animal husbandry products by waste water irrigation. City sewerage includes the waste water from activities of daily living and industrial wastes which contain many harmful metal substances, organic compounds, disease-causing bacteria, viruses and parasites, etc. So, how can this sewerage be converted into a valuable resource?

First, a survey must be made of the quality of the agricultural environment. Through this survey, many of the sewerage irrigation districts and research units will be able to obtain much firsthand data based on the histroy and present status of sewerage irrigation, the kinds and amounts of contaminants present, the extent of sewerage irrigation contamination of agricultural staple crops, of the soil and underground water sources, the effect of sewerage irrigation on the quality of staple crops and vegetables, the experience of the masses in controlling sewage contamination, etc. Where possible, collaboration with health agencies should be sought for studies on the effect of sewerage irrigation on the health of people and domestic animals.

This Tianjin conference summarized the survey results and experiences gained by various sewerage irrigation districts in recent years. It also examined proposals for further survey and research studies in the present and in the future. The meeting attendees invariably indicated that the agricultural environment is the important environment for man's existence--that following industrial development the problem of agricultural environmental protection should command the attention of the whole society, particularly that of the leadership structure. For the use of sewerage irrigation to increase agricultural production but not contaminate the environment, the first priority requires the industrial sector to improve on industrial waste management and disposal in accordance with national regulations. At the same time, the agricultural sector should also adopt suitable purifying measures and scientific irrigation methods to live up to its responsibility.

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PEOPLE'S REPUBLIC OF CHINA

DENUDING OF HAINAN'S FORESTS POSES THREAT TO WILDLIFE, AGRICULTURE

Beijing GUANGMING RIBAO in Chinese 2 Jul 80 p 2

[Letter to the Editor from Zhang Tianxiong [1728 1131 7160] to HAINAN RIBAO: "Vigorously Protect Hainan Island's Forest Resources"]

[Text] Comrade Editor:

Hainan is a treasure island of the motherland. Immediately following Liberation, there were 12.95 million mu of natural tropical forests throughout the island and 64 million cubic meters of forest [timber] reserves for an average 4 mu of forests per capita on the basis of the population of the island at that time. But as the result of heavy cutting and little reforestation for many years, and what with indiscriminate cutting and denudation, the destruction of forests and the creation of wastelands, and the burning of mountainsides becoming the order of the day, there now remain throughout the island only 3.67 million mu of natural forests (exclusive of shrub forests and jungles). The timber reserves have declined to 29 million cubic meters; the natural cover has declined from 25.7 percent right after Liberation to 7.2 percent for an average amount of forest per capita of only 1.2 mu. Because of the large area of forests that has been destroyed, water conservation capabilities have also declined with frequent droughts taking place, and declines are occurring in agricultural production. With the sharp reduction in forest resources, production of timber has become increasingly difficult. Valuable varieties of trees and some rare animals are on the verge of extinction. Hainan Island originally had more than 1,400 varieties of trees of which there were more than 800 varieties of shrubs, or 30 percent of the national total. Of these, many valuable varieties such as Hainan sandalwood (Ormosia henryi), polei [0980 1093], zijing [1311 0079], mountain chinaberry [Aphanamixis polystachya] and Hainan magnolia (Manglietia hainanensis) are world famous, but are now greatly diminished. Valuable forest animals such as the slope deer [0980 7773] and the black crown long arm ape (Hylobates concolor) are also near extinction. Surveys have shown that immediately following Liberation there were more than 200 slope deer, 100,000 water deer [3055 7773], and more than 2,000 black crown long arm apes throughout the island. Now there are only somewhat more than 40 slope deer, less than 10,000 water deer and less than 30 black crown long arm apes remaining.

For this reason, unless firm measures are taken to protect the forests, over the long run this "green treasure island" that is Hainan will be in danger of becoming a wasteland. The following proposals are made:

(1) Management of the forests according to law. The "Forestry Law" has been promulgated for more than a year, yet the unhealthy trend toward destruction of the forests continues. One major reason is nonenforcement of the law or no rigorous enforcement of the law.

(2) Establishment of natural tropical forest protected areas for tree varieties and forested areas of special value with strict prohibition on cutting of any kind. Forests for the prevention of erosion, forests for the conservation of water resources, shelter forests and sand stabilization forests in coastal areas, farmland (rubber) protective forests, highway forests, scenic forests and protective forests for granaries, or field forests, should be established in which only cutting for the tending or renewal of the forests is allowed. The tendency toward "heavy cutting and light renewal" has to be completely changed.

(3) Institute scientific afforestation under the management of specialized personnel. Establish a system of responsibility for afforestation under which all areas planted shall grow to maturity.

(4) Enhance scientific research on Hainan tropical forests. There are too few technical cadres for Hainan's forestry industry, and there are no trained forestry industry cadres at the top communal level. For a long time, forestry protection work has been unorganized, short of funds and lacking specialists in forestry protection work. Scientific research facilities have also been poor, and the question of professional posts for forestry scientific research workers has not yet been solved.

It is hoped that the authorities will give serious attention to these problems as so to fully arouse the enthusiasm of workers in the forestry industry.

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CSO: 5000

INDUSTRIAL WASTES FROM TIANJIN CONTAIN MANY HARMFUL SUBSTANCES

Tianjin TIANJIN RIBAO in Chinese 26 Mar 80 p 1

[Text] Sponsored by the Tianjin Municipal Office of Environmental Protection, collaborating units from the Institute of Forestry and Pedology, the Tianjin Environmental Protection Monitoring Station, and the Institute of Soils and Fertilizers of the Tianjin Agricultural College initiated a survey last year of the environmental quality prevailing in the Tianjin sewerage irrigation district. Some preliminary findings are now available.

Surveys of the environmental quality in sewerage irrigation areas constitute an important link in agricultural environmental protection work. The collaborating units visited all the communes located in the suburban sewerage irrigation district, and made a thorough study of all sewerage outlet points. Assisted by related agencies, the group now has a preliminary grasp of the sewerage disposal volume, contamination sources, types of contaminants and their amounts, size of the sewerage irrigation acreage in the nearby suburbs, the number of years that sewerage irrigation has been practiced, and other firsthand data. The group has summarized the experiences of the commune members and the masses, and the problems they have encountered in using sewerage sludge as a fertilizer resource. At the same time, sludge samples from the large sewerage outlets in the sewerage irrigation district were also taken by the units for further chemical tests and analyses to determine the amounts of the metal substances present.

The preliminary survey proves that the daily volume of sewerage disposed of in Tianjin averages 1,260,000 tons, adding to a total volume of 460 million tons dumped annually. Industrial wastes comprise 55.6 percent, and waste water from the activities of daily living make up 44.4 percent of this sewerage. The total amount of ammonia nitrogen contained in the annual sewerage dumped is comparable to that in roughly 16,500 tons of ammonium sulfate chemical fertilizer. The sludge recovered from sediments around the five largest sewerage outlets contain roughly 20 percent organic matter, with total nitrogen content between 0.7 percent and 0.8 percent, a liquid fertilizer resource of great utilization value. At present, the sewerage irrigation acreage in the Tianjin suburbs add up to more than 35,000 mu. What should be noted is the fact that the industrial wastes from Tianjin contain many harmful substances such as mercury, cadmium, arsenic, chromium, lead, copper, fluorine, chlorine, sulfides, cyanides, benzene, phenols, petroleum, etc. The possibility of these harmful substances contaminating the soil, crops, and underground water resources, the degree and extent of contamination, and the effect of these contaminants on agricultural product quality and human health all pose a series of problems that warrant further survey and analysis before the answers are found.

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CSO: 5000

PEOPLE'S REPUBLIC OF CHINA

TIANJIN ENVIRONMENTAL QUALITY EVALUATED BY AIRCRAFT SENSING

Tianjin TIANJIN RIBAO in Chinese 7 Jul 80 p 1

[Article: "Aircraft Remote Sensing Used To Evaluate Our City's Environmental Quality"]

[Text] In April and May, 25 scientific research units including the Institute of Remote Sensing Applications, Chinese Academy of Sciences, organized almost 300 scientific and technical personnel to carry out large scale comprehensive environmental testing involving aerial remote sensing in Tianjin and the Bohai, and conducted synchronized observations on land and sea, in order to carry out a comprehensive environmental quality evaluation of our city. At present they are organizing and analyzing the data. This experiment will reveal the dynamics of environmental pollution and will provide scientific data for comprehensive pollution control and urban planning development in the Tianjin-Bohai area.

The scientific experiment was the first application of advanced airborne remote sensing technology to environmental monitoring in this city. It made use of many types of advanced sensing equipment to carry out different environmental pollution dynamics surveys in Tianjin and its environs (including part of the Bohai) at different seasons and different times of day. The tests are expected to provide the following kinds of data: (1) atmospheric pollutant distribution in the Tianjin region; (2) pollution sources on the banks of the Hai River discharging pollutants into the river; (3) diffusion range of pollutants discharged by key pollution sources; (4) the amount of afforestation cover in the Tainjin region; (5) traffic levels on the main streets in the Tianjin city; (6) oil slicks on the surface of the Bohai and the nature of diffusion of pollutants into the sea water at several river mouths; (7) in the spirit of "one experiment, multiple benefits," the survey data will also be used in railway route selection, hydrography and water conservancy engineering surveys, the search for underground water sources and the like. Synchronized aerial remote sensing and ground and sea surface observations have yielded large quantities of preliminary imagery and other data on the topics mentioned above. The survey work will be continued between August and September or December. After the experiment in completed, it will provide a rich fund of information for environmental protection of Tianjin and its nearby ocean area, for land use, for urban planning, for harbor construction, for railway route selection and for reservoir design. The aerial remote sensing experiment is the result of energetic cooperation between the scientific and technical personnel of the relevant offices and research institutes of the Chinese Academy of Sciences, the relevant national ministries, research units of the National Oceanographic Office, and the Tianjin City Environmental Protection Office, Planning Office, Parks Department and Meteorological Office. In order to obtain data which were synchronized in time and location with aircraft remote sensing data, the scientific and technical personnel sometimes braved the spring cold on land, hastened to the shores of the Bohai and the banks of the Hai River both day and night, and carried out continuous surveying and sampling on the rolling sea, disregarding the tossing of their vessels. The aerial remote sensing personnel overcame all manner of difficulties to make their photographs, flying extremely low over the row upon row of skyscrapers in the city, or over mountain areas. The airfield workers and industrial cadres, technical personnel and workers in many areas enthusiastically contributed much assistance to the experiment.

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CSO: 5000

PRC'S OILFIELDS SUCCESSFUL IN FIGHTING POLLUTION

OW010734 Beijing XINHUA in English 0715 GMT 1 Sep 80

[Text] Beijing, 1 Sep (XINHUA)--More waste water treatment stations are being built at China's major oil and gas fields, the environmental protection office of the Ministry of Petroleum Industry said today.

Altogether, 78 stations have been built since 1979 at 12 fields, including Daqing, the country's biggest oilfield, and Shengli. Another 15 are under construction or being expanded.

After the separation of crude oil into oil, gas and water, the stations clean the effluent of solids and practically all the residual oil and pump it back into the ground as clear water.

Oil-bearing waste water is one of the major pollutants discharged from oilfields--a total of 324,000 cubic meters daily at the 12 biggest fields in China.

At present, purification stations are treating 297,000 cubic meters of oily effluent, approximately 92 percent of the total.

Daqing oilfield, which produces about 50 million tons of crude oil a year--nearly 50 per cent of china's total output--has 21 treatment stations with a daily capacity of 170,000 cubic meters of waste water, 95 per cent of the amount discharged. At Shengli, Dagang, Liaohe and others 90 per cent of the waste water is treated.

Some oilfields still discharge a portion of oily effluent, but a spokesman for the petroleum ministry's environmental protection office said, new techniques are being studied to alleviate the problem. The 15 newly built or expanded treatment stations will be able to handle 100,000 cubic meters of waste water.

CSO: 5000

INCREASE IN GAS USAGE COULD CUT CITY'S POLLUTION BY ONE-THIRD

Beijing GUANGMING RIBAO in Chinese 3 Jul 80 p 2

[Article by Zheng Yijun [6774 0001 6511]: "Vigorously Develop Coal Gas To Solve Beijing's Air Pollution Problem"]

[Text] Among the proposals of the secretariat of the Central Committee is the development of Beijing into a fine, clean, first-rate, modernized city. In order to realize this objective with all possible speed, control of air pollution in Beijing is an urgent matter. Air pollution in Beijing is getting worse by the day. The factors creating air pollution in the city are many faceted of which the widespread use of antiquated direct burning of coal creates the greatest danger. Coal accounts for 76 percent of the fuel consumed in Beijing and 70 percent of this amount is burned directly. Direct burning of coal accounts for 90 percent of all fuel consumption by households. A majority of coal-burning equipment is outdated small boilers, small coal-fired tea urns and the small coal-fired cooking stoves that every household has. According to statistics, there are almost 10,000 small boilers currently scattered throughout the city, and 1 million small coal stoves for use in cooking and heating. Under normal operating conditions, for each ton of coal burned, an average of 20 km of sulfur dioxide is emitted. Small boilers emit between 10 and 30 km of soot, and small coal stoves as much as 20 or 30 km for every ton of coal. Officials concerned estimated that a total of about 200,000 tons of sulfur dioxide and more than 300,000 tons of soot are emitted into the atmosphere of the entire city annually as the result of burning coal. Since most of the soot is vented into the air at low altitudes, pollutants remain in congested residential areas for a long time to foul Beijing's air, spread as smog and result in increased numbers of overcast days. During the heating season in winter, especially when there is an increase in the use of coal and when weather conditions are unfavorable for the dispersal of pollutants, the density of sulfur dioxide in urban areas, according to tests made during the past years by environmental protection units, is three or four times greater during the heating season than during the nonheating season, and the amount of airborne dust is five times greater. The density of sulfur dioxide, airborne dust and nitrides and oxides in the air in urban areas during wintertime exceeds national standards.

The use of backward methods for the direct burning of coal not only seriously pollutes the atmosphere, but also causes much waste. At the present time the combustion efficiency rate of the stoves widely used in residences is only 15 to 18 percent, and the combustion rate for small coal-burning boilers is usually only about 50 percent, so almost one-third of the coal is wasted. Improvements to the boilers with the installation of soot-removing equipment could reduce the harm done by pollution, but it is not a method that goes to the root of the problem. It would not eliminate the sulfur dioxide produced by combustion, and, what is more, it would not solve the problem of soot pollution caused by more than 1 million coal stoves and small coal-fired tea urns. It has been estimated that as the annual amount of coal used increases, even if effective smoke elimination and soot-removing equipment were to be installed on all boilers, by 1985 the quantity of soot vented into the atmosphere throughout the city annually through the burning of coal would still increase by more than 50 percent, and the amount of sulfur dioxide would double. Both domestic and international experience has shown that the way to solve the problem of urban air pollution is to transform urban burning habits by using clean gas or liquid fuels entirely to replace the direct burning of coal. In some economically advanced countries, natural gas, coal gas and light oils are used throughout large cities, and a great increase has also occurred in residential electrification. This has effectively solved the problem of urban air pollution. On the basis of current practicalities in Beijing, large increases in the use of electric power by city dwellers is not realistic. No large amounts of natural gas resources have been developed in the vicinity of Beijing, and the state cannot use precious petroleum resources for fuel. Therefore, in line with the state energy plan, Beijing should now make fullest use of liquified gas resources and at the same time vigorously develop the coal gas industry so as to bring about gradually the gasification of the city. Development of coal gas is not only practical and workable, it can also solve the problem of atmospheric pollution, and is cost effective.

1. Though the technology and equipment for making coal gas is quite complex and will require a certain investment of funds, the benefits that follow from the investment will be great with a large increase in fuel efficiency being realized. In comparison with the direct burning of coal, construction of a coal gas plant capable of producing 4 million cubic meters of gas annually will effect a saving of about 1 million tons of coal annually and a saving of investment for coal mine construction of 100 million yuan. From this benefit alone, within only 7 or 8 years, the entire investment for construction of the coal gas plant can be recouped. Coal gas also has the advantages of being easily transported, convenient to use and easy to regulate. It lends itself to automation and it can reduce the amount of urban transportation, improve production efficiency and reduce product costs.

2. It takes a fairly long time to construct a coal gas plant. In order to solve the current problem of supply of coal gas being unable to meet demand, a rather small-scale facility for converting petroleum to gas

followed by the development of some liquified petroleum may serve for the interim. But major forces must be concentrated for the immediate beginning of construction on a coal gas plant. It is envisaged that by using the coal available in the north China region, and through the application of pressure gasification production technology, a coal gas plant with a daily output of 2 million cubic meters of gas can be completed around 1983. Around 1986, another coal gas plant of the same scale can be built applying new technology to coal from western Beijing. This 4 million cubic meters of coal gas, together with readjustments in the use of the city's existing coal gas from coke ovens and liquified petroleum gas, can provide residents of the city with clean gaseous fuel to meet all their needs for cooking fuel plus some of their needs for heating fuel. Public welfare projects and some small industries in the city would also be able to use this gas. In this way, the amount of sulfur dioxide and soot vented into the atmosphere throughout the city by people burning coal could be reduced by one-third, the air pollution could be virtually brought under control, and a lot of coal resources could also be saved. If the entire city's coal gas production could be increased to 10 million cubic meters per day, coal gas could be used for the daily lives of most of the people and for most industries (except for coking and the generation of electricity), and not only would 3 million tons of coal be saved thereby, but the quality of the air in Beijing would be substantially improved.

9432
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GUILIN CLEANING UP INDUSTRIAL POLLUTION

OW300309 Beijing XINHUA in English 0257 GMT 30 Aug 80

[Text] Nanning, 30 Aug (XINHUA)--Guilin, one of China's best-known scenic spots, is recovering its former beauty under a local government scheme to clean up industrial pollution.

In the past year, 11 factories and four electroplating workshops have been ordered to stop production. Four other factories have been moved out of the city and 12 more are being moved.

The program is a response to a call by the central government for nationwide pollution control. Last year, the state enacted an environmental protection law, urging all industrial enterprises to take stringent measures to eliminate pollution, and this year it allocated 4.85 million yuan for Guilin's anti-pollution drive.

A total of 19 Guilin factories have fitted devices to treat waste water and coal ash and 70 boilers have been converted to eliminate smoke and dust.

Nanxi Mountain, known for its picturesque hills and clear water, was spoiled when the river at the foot of the mountain was contaminated by coal ash and other effluent from factories.

However, the river is running clear again since the Guilin rubber plant completed a project under which 30 tons of coal cinder is taken to a brickworks each day to be made into building materials. The plant's daily output of 140 tons of waste water is recycled for use in its boilers.

A power plant, also responsible for fouling the Nanxi River, stopped operation last year.

Guilin steel mill closed its steel making shop last year after it had blackened the famous reed-flute karst formation cave. Now it has fitted the rolling mill with smoke and dust removing equipment. Waste water discharged from Guilin factories into the scenic Lijiang River has been greatly reduced.

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PEOPLE'S REPUBLIC OF CHINA

BRIEFS

GUANGDONG ENVIRONMENTAL CONFERENCE--The Guangdong Conference on Environmental Protection was held from 11 to 18 August in Guangzhou. The participants in the conference visited some advanced units in environmental protection work and pointed out that despite the achievements scored in environmental protection, progress in this area is slow. Environmental pollution is still serious, particularly in Guangzhou, Maoming and Shaoguan municipalities, where pollution is very serious. Not only have a lot of resources and energy been wasted, people's livelihood and health have also been threatened. Solving the environmental problems in Guangdong has now become an urgent issue. If this is not steadily grasped, the consequences will be dreadful to contemplate. As a special economic zone, it is necessary for Guangdong to avoid the old method of construction first and harnessing later. Enterprises which fail to solve the problems of pollution must be fined. The participants demanded that all prefectures and municipalities put environmental protection offices and bureaus on a sound basis while counties must also set up environmental protection offices and bureaus. [Guangzhou Guangdong Provincial Service in Mandarin 1120 GMT 21 Aug 80 HK]

XINJIANG BEAVERS--Urumqi, 27 Aug (XINHUA)--A Xinjiang survey team consisting of scientific workers of various nationalities recently concluded its survery of the autonomous region's beaver preservation zone with a report to the departments concerned, calling for protection of this diminishing species of animal in China. China's beavers are found only in the three river valleys in Qinghe County, Xinjiang. Since 1965 their number has dwindled by as much as 90 percent owing to indiscriminate felling of most of the willow trees along the rivers. The team suggests measures to rebuild the forests along the rivers, to prohibit private hunting of beavers or use of fishnets in the rivers, and to create better breeding conditions for the beavers, which are on the brink of extinction. [OW280625 Beijing XINHUA Domestic Service in Chinese 0136 GMT 27 Aug 80]

LIAONING WATER POLLUTION--The State Council recently issued a notice approving Liaoning Province's proposal on controlling water pollution in the Hun River, contending this is an urgent measure needed to protect underground water resources in Shenyang Municipality and the (Dataofang) reservoir, the main water source in Fushun Municipality. According to the notice, Liaoning

Province should take steps to discover the cause of water pollution in these two municipalites and strive to control it before 1985. Since September 1979, 54 scientific and technical personnel in Shenyang and Fushun municipalities have been working on this project. They have adopted proposals on controlling water pollution in the Hun River, and the provincial environmental protection bureau submitted a report to the State Council on pollution of the Hun River and proposals to control it. A State Council notice was issued. The provincial environmental protection bureau is organizing departments concerned in Shenyang and Fushun municipalities to implement the State Council's notice. [Shenyang Liaoning Provincial Service in Mandarin 2200 GMT 23 Aug 80 SK]

SHANGHAI MEETING ON POLLUTION--The Shanghai Municipal People's Government held an environmental protection work conference on 16 August, calling on all areas to control pollution caused by residues discharged by factories. The meeting made public the rules for collecting charges and imposing fines on enterprises that discharge pollutants. Han Zheyi and Yang Di and other leaders of Shanghai attended the meeting. Han Zheyi pointed out that pollution in Shanghai has reached a serious level and called on departments concerned to protect Shanghai's environment by controlling pollution. [Shanghai City Service in Mandarin 1130 GMT 16 Aug 80 OW]

ZHEJIANG PLANT CRITICIZED--More than 1,700 residents in Hangzhou Municipality, Zhejiang, in a signed letter submitted to the Zhejiang Provincial CCP Committee's discipline inspection commission on 28 July, accused the Hangzhou mining equipment plant of seriously polluting the environment of the neighborhood. After a joint investigation of the case was completed, the Hangzhou Municipal Economic Affairs Committee on 31 July ordered the plant to immediately stop (?oil barrel) production, which releases poisonous gas. After accepting the order, leaders of the plant conducted self-criticism on 1 August for violating a similar order issued them in July of 1979. [Hangzhou Zhejiang Provincial Service in Mandarin 0400 GMT 12 Aug 80 OW]

HUNAN MOUNTAIN ECOLOGY SEMINAR--In early August, 17 associations including forestry, soil and biology in Hunan held a seminar on developing mountain resources and ecological balance. A total of 57 theses were presented to the seminar. The participants thoroughly pointed out the important significance for protecting the ecological balance and the problems of developing the mountain areas and protecting the ecological balance in Hunan. They revealed that there are 190 million mu of mountain areas in the province. This accounted for 63 percent of the total areas in Hunan. They also pledged to strengthen propaganda on understanding ecology, effectively promoting afforestation, protecting and developing the existing forests and strengthening scientific research on the mountain resources in the province. [HK200151 Changsha Hunan Provincial Service in Mandarin 1100 GMT 18 Aug 80]

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QUESTION OF WATER PURIFYING INSTALLATIONS DISCUSSED

Sofia TEKHNICHESKO DELO in Bulgarian 2 Aug 80 p 6

[Article by Lyudmil Paunovski: "The Problems of the Bistrets Plant: When Will Modern Water Treatment Equipment Be Produced in Bulgaria?"]

[Text] In terms of a number of economic indicators Bulgaria is not behind the most developed countries in the world. This includes water consumption for residential and industrial needs. Why, then, are we still far below world standards in the production of water treatment equipment?

A solution does exist. . . .

Considering the current incredibly high norms of water consumption for domestic and industrial needs, it is natural that the question of the purification of waste waters and their recycling is urgent. It would be no exaggeration to state that this is one of the important problems of our time, for it is a basic truth that we must not forget water purity if we are to preserve the cycle of life.

It is a worldwide practice for specialized plants to produce complete treatment stations for residential and fecal waters with an output of up to 12 liters per second. Either separately or on a parallel basis, such stations serve cities with populations of 10,000 or more. Generally speaking, the trend in the production of water treatment equipment is to develop ever more comprehensive treatment stations meeting the various needs, produced entirely by individual plants. Such is the case, for example, of a station for the water used by car washing enterprises and garages. It is the size of an average room yet it returns to the car wash close to 90 percent of the water used. Another case is that of treatment stations for swimming pool waters or installations for the treatment of chemically polluted waters, complete stations used by livestock farms, and so on, and so forth.

All of us are familiar with the most frequent argument cited by the various agencies to justify delays in the completion of a treatment station: delays in the completion of construction-installation projects. This is not astounding, considering that in our country all stations--big and small--are built according to conventional methods which involve the use of big pools for mechanical and biological filtering and precipitation. They are made of reinforced concrete and require manpower, scaffolding, and construction materials, items which are still in short supply. Also required is the need for special designs for each individual treatment station.

The problem can be resolved by building a number of smaller stations manufactured by the plant and installed. The pools are made of metal eliminating the need for construction. This makes possible the standardization of treatment stations with their parts and assemblies and designs. Adding to this the speed of the installation and the general completion we see their obvious advantages. Such data come from our specialists dealing with water treatment problems. We know what is most progressive in this area yet...it is not being done!

We continue to avoid the manufacturing of small treatment stations such as those used for swimming pools. Never mind that the entire water is to be replaced once a week even though a treatment installation would require this once every six months.... One could hardly find a single car wash whose water is recirculated. We are unable to develop treatment installations for livestock farms mainly because the individual parts have not been standardized.

The Plant's New Name

Still something is being done in our country to develop treatment equipment. For the past 6 years the only single plant of this kind, bearing the euphonious name of Bistreta, has been operating in Kurdzhali. So far it has mastered the production of 20 basic items coming in 60 different models and sizes. Along with the basic and long-term production of aeration brushes, and surface and turbine aerators, the plant also manufactures good quality screw transporters hauling the water from one level to another. The small contact treatment stations using biodisks, with a 1 and 2 liter capacity, used for the treatment of residential and fecal waters, mainly in settlements with a population of no more than 700 people, or large camping grounds, have excellent indicators. Treatment stations with an output of 0.3 liters per second, of the biotank type, quite convenient for small camps and hotels, are being developed.

I must admit to a substantial difficulty in an effort to single out these facts among the numerous problems which I encountered in my visit to the plant. Or, as justifiably pointed out one of my collocutors, the enterprise should be renamed...."Problem!"

It is hard to understand why it was decided, 6 years ago, that the plant to produce water treatment equipment for the entire country should take the old facilities of the Kurdzhali plant for nonstandard equipment which was more a big workshop than anything else. The new managers made an effort to correct the situation somewhat. Through their own efforts and funds they built yet another premise. One way or another, however, to this day nearly 50 percent of the plant's activities take place in the open! Considering this situation, it is understandable that only small parts and relatively simple installations are being produced. Generally speaking, at this point the Bistrets Plant has reached the peak of capacity both in terms of quantity and quality. We must admit, however, that this peak is very low....

Yet, there is a Council of Ministers ordinance according to which no single industrial enterprise or economic building could be commissioned without installed treatment facilities. Since the Kurdzhali plant is unable to keep up, such equipment shall be imported from abroad.... The construction of a new plant for treatment equipment near Kurdzhali was undertaken as early as 1978. However, neither the builders nor the managers of the enterprise are able to name a completion deadline. All that is known is that in 2 years only one-quarter of the funds have been used. At that rate, in another 6 years Bistrets may be able to move to its new premises.

However, even then it would be hard to avoid problems. For the time being, only the director and his deputies have a university education. In the future, however, at least 20 university graduates will be needed. It will not be possible to find all of them together. However, even on a one-to-one basis nobody from the Lenin Higher Machine and Electrical Engineering Institute is arriving. What, indeed, would attract the young specialists since construction of a 330-place hostel which was scheduled for completion together with the plant, has been abandoned. All in all, the personnel is scheduled to increase sixfold while output will rise by a factor of nine. Considering such vague and stretched construction deadlines, the plant's management is uncertain as to when to recruit the necessary manpower.

A Precise Address

In the course of this assignment I came across a number of strange and puzzling matters. What struck me most, however, was the fact that the Bistrets Plant, the only Bulgarian enterprise engaged in the production of water treatment equipment, is literally hanging in the air! Officially, it is under the direct jurisdiction of the Economic Combine for Ventilation and Treatment Equipment in Burgas. However, because of the distance or other reasons, for years on end a representative of the combine has not visited Kurdzhali. That organization has not participated either in the designing or financing of the plant.

Bistrets is contracting either directly with the Committee for Heavy Investment Machine Building or the Treatment Equipment Institute in Sofia which designs the machines and equipment. The Sofia institute is, officially, a branch of the Institute for Ventilation and Burning Equipment in Burgas. In reality, however, it has long become an autonomous unit. Therefore, the producing plant and the superior economic organization have official relations and so do the design institute and its branch. Yet, this entire formalism leads to the production of a small number of somewhat substandard treatment installations.

Even when the equipment is of good quality the likelihood of it remaining inoperative is quite high. This is no paradox. It is simply a question of complex and specific installations. That is why, as early as 1977, the Council of Ministers issued its Order No 213, according to which the Ministry of Machine Building was ordered, through its Tekhnoeksport organization, to undertake the procurement, installation, and servicing activities of treatment equipment. This would avoid the installation of such equipment by people unfamiliar with it. However, so far, Tekhnoeksport continues to engage in trade and equipment activities only. The installation activities which should insure the proper preservation of the equipment and its installation and participation in the startup and testing of the systems and the training of the servicing personnel, have been neglected. It is well known that in a number of areas in our country the maintenance of treatment stations is in a pitiful condition. The main reason is that there either are no people assigned to maintain it or, if there are, their skills are either inadequate or nonexistent.

It is clear that a great deal of formalism exists in the organization, production, and operation of water treatment equipment. The fact is that such activities have been scattered among a variety of organizations and departments which adversely affects end results: completion deadlines and the quality and effectiveness of the equipment. That is why, in our view, the time has come for the Ministry of Machine Building:

- To allow the organization of a scientific-production trust under the Committee for Heavy Equipment Machine Building which could be named "Treatment Equipment." It would coordinate and manage scientific-research, design, and planning and development activities. It would undertake the production, supply, installation, startup, and tuning of individual machines and equipment as well as complete water and air treatment systems;

- To do everything possible to accelerate the completion of the new building of the Bistrets Plant;

- To undertake the training of specialized cadres and to assign more specialists with higher education to Kurdzhali;

- To determine the basic variety of goods to be produced by the plant. This should include complete treatment stations for the specialized treatment of waters or for servicing bigger settlements;

- To consider when the time comes whether or not designs for such stations should be purchased abroad or developed in the country. This will enable the new plant to undertake the production of something truly new and effective!

It is true that our country is quite rich in water sources. This, however, does not mean in the least that they should be indiscriminately wasted.

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WATER POLLUTION CONTROL MEASURES OUTLINED

Amman AL-DUSTUR in Arabic 1 Jul 80 p 2

[Text] The gathering of all data pertaining to the study and research conducted by various organizations on the kingdom's water system and its protection from pollution has begun. This is in preparation for the analysis and presentation of a work paper on the subject, to be discussed in a general meeting.

After a cabinet meeting attended by select ministry and department officials, Dr Jamal al-Sha'ir, minister of municipal and rural affairs, said that the formation of a higher committee responsible for the management and control of water was discussed. Management will be centralized and operation will be decentralized in accordance with work requirements. This committee will, in turn, issue a report to information centers, municipalities, organizations, companies and factories which will serve as a visual guide for solving water problems and protecting water against pollution. He added that, following a comprehensive review of the existing water laws, a new law was discussed to protect drinking water from pollution.

A general discussion took place at the meeting where the delegates of the ministries and organizations discussed the subject of water, its organic pollutants, the effects of insecticides and pollutants on surface water, particularly chemicals produced by factories, drainage holes, and soil saturation by wastewater which penetrates into ground water.

The discussion also included the subjects of installation standards and procedures for allowable degrees of water pollution based on international standards: the necessary degree of purification of water designated for human consumption and water designated for industrial and agricultural usage; and the distribution of officials among ministries, agencies and scientific research centers and their laboratories.

The meeting was attended by the director of the Drinking Water Agency, the deputy minister of municipalities, and the director of the environmental department. It was also attended by representatives of the Royal Science Society; the ministry of health; the Water and Sewage Authority; the Natural Resources Authority and the National Planning Council.

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COMMENTS ON EXTENT OF INDUSTRIAL POLLUTION IN GULF

Amman AL-DUSTUR in Arabic 7 Jul 80 p 16

[ORIENT PRESS Report: "What Have the Gulf States Done to Protect Their Natural Resources? Oil Exploration, Refining and Industrial Development Increase Pollution"]

[Text] If Gulf nations do not take the required precautionary measures soon, the Arabian Gulf will become, by the end of this century, an area unfit to live in due to its increased level of pollution of all kinds.

In fact, some of these measures have been agreed on and some others are pending agreement. This is one of the most dangerous problems the area is facing due to rapid industrial development and its effects on the environment.

As pollution results from several aspects of modern development, the Orient Press's report concentrates on air and water pollution and specifically points out the increasing degree of pollution in the Arabian Gulf area, and the precautionary measures taken to date.

One of the special features of the Arabian Gulf that distinguishes it from the rest of the world is its being a relatively small area, with limited natural resources, and with hot and very humid weather, in addition to the more prominent feature that made it a focal point of world attention, which is its being one of the richest oil-producing areas.

Pollution Caused by Drilling

Offshore as well as land oil exploration and extraction operations cause a high degree of land, water and air pollution. In some cases, drilling operations can cause explosions, causing liquid petroleum to gush into the air in an uncontrollable manner. Such an explosion has a damaging effect on the environment, and operations to control it usually require a considerable amount of time and money.

In offshore petroleum operations, pollution basically results from the spread of carbon dioxide and hydrocarbons as a result of the gas-oil separation process. Accidental petroleum spills also occur during offshore drilling. Such accidents must be controlled before they become a severe environmental hazard.

Other pollutants include drilling mud. Drilling pipes are coated with special fluids to protect them, float drilling tailings to the surface, and level the hole walls. All this results in a petroleum mud that has to be transferred to the shore for treatment, together with any oil-polluted drilling tailings.

Transportation Operations

Oil transportation operations are another source of pollution. Since most of the petroleum extracted from the wells is transported by sea, and since such transports have increased 7 times during the last 20 years, sea transportation is responsible for 1/3 of the total oil spills in the sea.

A group of experts specialized in scientific study of this sea pollution described it as follows: "Sea pollution means that man, directly or indirectly, introduces petroleum products or byproducts to the sea structure (including the mouths of rivers). This causes damage to live resources, poses a health hazard to human beings, disturbs sea activities including fishing and other useful sea projects, affects seawater usage and results in the deterioration of a high standard of living."

Pollution caused by sea transportation of oil is classified into 2 basic kinds: 1) Pollution during petroleum operations; and 2) Accidental pollution. The main source of the first kind of pollution is the ballast which is carried by oil tankers and is equivalent to 40 percent of the maximum tankers' capacity to keep their balance.

Accidental pollution is mainly caused by oil tanker accidents which result in huge oil spills that cause heavy local damage to the sea environment. Frequently, oil spills occur mainly in the ports as a result of operational errors in loading or unloading; for example, oil spills from hoses, pipe joints, and other similar accidents.

International Agreements for Pollution Control

A number of international agreements exist that were signed to prevent petroleum pollution of the seas. The first group effort to sign an international agreement of this kind is the "International Conference for Oil Pollution of the Seas," which was held in Washington in 1926. The first international agreement for the prevention of oil pollution of the seas was concluded in 1954. It was considered an extremely important achievement because it handled the pollution problem and control measures on an international level. It also handled the matter of oil spills from ships, especially oil tankers.

An international conference for sea pollution was held in 1973 by the international government advisory organization for navigation. This conference was an important event in the history of international efforts to control sea pollution in that it declared the "international agreement for control of pollution by ships." This agreement plays a major role in controlling pollution resulting from petroleum activities and other harmful products, and reducing the number of accidental oil spills to a minimum.

Leaks that occur in underground petroleum pipelines are as dangerous to the land environment as sea pollution is to the sea environment. A lot of research was conducted concerning problems of oil leakage into the soil and ground water, and the necessity of protecting rivers and streams [from these oil leaks], preserving wildlife and taking care of plants, etc.

Petroleum and its byproducts that are spilled on the ground may cause a number of hazards among which are: fires, explosions, ground water pollution, damage to the environment and the civic facilities that are, in some cases, located underground.

Pollution from Refinery Products

Oil refineries play an important role in pollution, which, in this case, is divided into 3 main types: 1) Pollution of the [offending] senses, 2) Air pollution from refinery products; and 3) Water pollution.

Pollution of the senses means the noise, smell and visual pollution. But the most dangerous kind is air pollution from refinery products. Oil storage tanks are one of the main emitters of hydrocarbon through evaporation. In order to control this situation, the law must require all tankers with a capacity of over 40,000 gallons to have floating covers, and facilities should be designed to absorb the vapors originating from the most volatile material.

Pollution also results from redemption equipment, crude oil distillation units, cooling towers and oil separation ponds which receive wastes containing hydrocarbon. In the case of redemption equipment, pollution occurs as a result of dust particles, carbon monoxide, hydrocarbon and sulphur dioxide in the atmosphere. Pollution caused by crude oil distillation units results from the evaporation of hydrocarbon. Corrective equipment consisting of burners and furnaces are used in this case. Vapor absorption equipment is used for other pollution sources.

What is the current situation today in the Arabian Gulf area in relating to pollution control, especially since this area as aforementioned, is one of the heaviest petroleum producing areas relative to its size?

Development in the Arabian Gulf

Shafarash Turikyan conducted a study on "Environmental Effects of Petroleum and Alternative Energy Sources," which he presented to the

Regional Council for Alternative Methods of Development and Ways of Life in Western Asia, held in Beirut at the beginning of this year under the direction of the UN Economic Committee for Western Asia. This study reported that the Arabian Gulf area is facing dangerous problems in relation to pollution because of its unusual circumstances. It is the world's fastest growing area in the industrial development field. It annually receives half a million people. The Gulf, which consists of 1200 kms of coast overlooking a warm, unusually salty sea, is considered the main entrance to the richest oil producing area in the world.

There are approximately 100 ships passing through the Straits of Hormuz daily. The Gulf exports around 60 percent of the world's sea-transported petroleum. Processing, petroleum complexes, oil tankers, excessive salinity of the sea, and the high temperature and humidity are major causes for pollution. The Gulf ranges between 75 and 350 kms in width. Its average depth is 34 meters but there are coasts extending several kms into the sea with water less than 10 meters deep. In addition to this, the area has the largest water desalination complex in the world. Those facilities transfer drinking water to the land and return extremely salty water to the sea.

Furthermore, 142 major coastal facilities are in the expansion or planning stages. These consist of 60 refineries and other oil facilities, 11 cement factories, 8 fertilizer factories and 26 water desalination and power plants. Average industrial investment on the Arab side of the Gulf is 40 million dollars per km of coast.

Moreover, sea pollution in the coastal areas is increased by the fact that winds and surface currents return refuse to the shores. Also, the hot and humid air, which does not circulate quickly, causes dangerous air pollution from refineries, petrochemical plants and cement and metal industries.

Pollution Saturation by End of Century

If no measures are taken, it is possible that the Gulf may, by the end of this century, reach the point of saturation from pollution. But the Gulf nations are intent on facing this problem. Eight Gulf nations signed 2 agreements in 1978 to promote sound environmental development through joint efforts. These agreements were signed in meetings held by the UN Environmental Committee.

The first agreement was called the Kuwait Regional Agreement for Cooperation in Protecting the Sea Environment from Pollution. It is the first of the 2 agreements approved by the 8 countries who "realize that pollution of the sea environment in the area with oil and other harmful or poisonous products, resulting from human land and sea activities and particularly from the operations to dispose of these materials in an indiscriminate and uncontrolled manner, poses an increased threat to sea life, the fish resources and human health and the use of shores and other facilities for recreational purposes." The 8 nations approve "the prevention, reduction and fighting of pollution resulting from intentional or accidental disposal operations by ships; the disposal of ship, airplane and land reclamation wastes and related coastal dredging operations.

The second agreement calls for the regional cooperation council against pollution resulting from oil and other harmful materials to attend emergency meetings "to cooperate in taking necessary and effective measures to protect the coast from the dangers and effects of pollution resulting from the existence of oil or other harmful materials in the sea environment, caused by shipping accidents."

In addition to approving the 2 anti-pollution agreements and the work plan, the UAE, Iran, Bahrain, Iraq, Oman, Qatar, Kuwait and Saudi Arabia unanimously agreed, during their meeting in Kuwait in April 1978, to establish a "center for mutual cooperation in sea emergencies" in Bahrain. This center will coordinate efforts to combat petroleum pollution through the establishment of a permanent system to detect pollution, determine its source, the volume of petroleum spills, and to prevent dumping wastes and harmful materials in the Gulf. The center will be equipped with boats and planes to fight pollution.

The signatories also decided to establish a regional trust fund with a capital of 6.3 million dollars, and an organization for sea environmental protection in Kuwait.

The work plan aims at assessing the environmental conditions, establishing new guidelines to administer activities which affect the environment and setting up legal bases for cooperation and supportive measures, including the establishment of national and regional organizations. The UN environmental program will offer this organization all its available expertise to begin implementation of the first phases of the work plan.

Beginning 1 April 1979, Bahrain, Iraq, Oman, Qatar and Kuwait began placing their documents of approval of the 2 agreements with the government of Kuwait who was holding the agreements. On 30 June 1979, 90 days after the 5th approval was placed, the agreement became effective.

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CSO: 5000

BRIEFS

COMMUNIQUE ON DROUGHT CONDITIONS--The government of the People's Revolutionary Guinean Republic informs both the national and world communities that severe drought has hit the regions of Koundara, Mali, Gaoual, Labe, Tougue in middle Guinea, the regions of Siguiri, Dinguiraye, Kankan, Mandiana, Kouroussa, Dabola in upper Guinea and even a few regions in the forest zone including Kissidougou and Gueckedou. The above-mentioned regions are facing a serious situation that is unprecedented in Guinea. They are about to be confronted with acute food problems which will affect two-thirds of the country's population. In fact low rainfall will cause food shortages with unforseeable consequences for Guinea and its people. The government of the People's Revolutionary Guinean Republic is calling on all Guinean citizens to take the necessary steps to confront this exceptional situation by adopting austerity measures and the spirit of saving and sacrifice. The government of the People's Revolutionary Guinean Republic invites the regional revolutionary authorities, the district revolutionary authorities and the local revolutionary authorities to henceforth envisage all measures likely to remedy the consequences of the calamity. Ready for the revolution! [Text] [AB221530 Conakry HOROYA in French 12-13 Aug 80 p 1]

CSO: 5000

PROLONGED DROUGHT INCREASINGLY AFFECTS ENVIRONMENT

Bissau NO PINTCHA in Portuguese 29 Jul 80 p 8

[Excerpts] The authorities are striving to do everything in their power, and international solidarity has always answered our appeals promptly. Comrade Vasco Cabral, state commissioner of economic coordination and planning, in one of his recent official visits to the country's interior, pointed out that the situation is alarming and stated: "It is high time that we join the international community in a campaign to acquire certain principal food products."

This is the raw and painful truth. The reduction in annual rainfall is becoming increasingly worse and from year to year there is noticeable irregularity in its distribution throughout our national territory. The increasing takeover by the desert and fires of various sorts are the real, or at least from a scientific viewpoint, the supposed factors responsible for the obvious drought we are beginning to experience.

Again in 1980 we expect to have little rainfall throughout the land. We have only to note that the National Weather Bureau has already advised that the quantity of precipitation recorded during the current rainy season is very low. As a comparison with the same period during the last 10 years, the amount of rainfall in Bissau ranks ninth, that in Bafata seventh and that in Bolama fourth.

We are already in the middle of the agricultural season (June to September), and some of the country's areas have had almost no rain. The south has been less affected. It has rained a few times in Bissau. Obviously, the capital needs this natural and annual washing. Bissau also has its share of private gardens and, in the outskirts, there are also "bolanhas" and areas of land for other types of production.

In the country's North and East, more courageous farmers have planted seeds, and most of them see their cornfields die shortly after sprouting, as was, unfortunately, the case in Farim and vicinity. In areas less hit by the irregularity of the rainfall, the plantings grew slowly but persistently, benefiting to some degree from the earth's humidity.

Fauna Also Threatened

The constant reduction in rainfall is also threatening our fauna due to the gradual disappearance of their forest habitat. "In this respect," Comrade Irenio dos Santos Lopes, chairman of the state committee of the Oio Region, said, "if there are no rains, there are no streams of water, and the wild animals will die of thirst. This problem could be solved with the opening of wells in various parts of our brush areas and the construction of large concrete watering troughs for our fauna which, otherwise, would again have to move on to neighboring regions in search of better living conditions, as occurred during the struggle for national liberation."

In short, this is a far from exhaustive analysis of the problems we are facing due to a lack of rain, problems which require an abundance of thought.

8568
CSO: 5000

DETERIORATING CONDITIONS IN BISSAU DESCRIBED

Unclean Conditions Criticized

Bissau NO PINTCHA in Portuguese 24 Jul 80 p 2

[Excerpts] Truly, Bissau, once considered the cleanest city on the West Coast, a fact often confirmed by foreigners visiting the area, is now increasingly becoming a far from clean city.

In the streets one sees piles of garbage, old cardboard boxes, the heads of shrimp and refuse thrown into open ditches inviting mosquitoes. Another degrading situation--and a dangerous one--is a genuine invasion by mangy dogs, seen principally in the business area. Some even make one nauseous in addition to being sources of serious contagious diseases. And the crowning touch is that they may be petted by children who then put their hands in their mouth.

But we also have the insane without any mental hospital, who, in their madness, may well want to attack people in the streets; and this is now more serious, since we are without light.

Can it be that looking after the city boils down to just planting trees in the streets (which also has its importance)?

I think not. We must take into consideration what form hygiene should take, for in our city we are seeing an assault on public health.

Attempt To Justify Conditions

Bissau NO PINTCHA in Portuguese 24 Jul 80 pp 3, 6

[Excerpts] In response to recent criticisms, the State Committee of Bissau decided to provide the capital's residents with an explanation and gave as the main reason for the constant accumulation of garbage in the streets the lack of vehicles for its removal.

But in truth, although the responsibility for each task falls upon those directly responsible for carrying out that task (while those who contribute to a worsening of the centers of impurity, in this particular case, make it a point not to collaborate), it should be noted that there are circumstances in which the mere will or duty to perform the task are exceeded by conditions imposed upon our realities. This is what is occurring with the State Committee of Bissau.

According to our information, Bissau's cleaning services currently have six garbage trucks. But the situation could be different if those vehicles were in proper working condition. Based on what we were able to ascertain, the trucks are old and are waiting to be repaired.

"Formerly, we were able to keep three or four vehicles circulating each day removing refuse, while a like number were being repaired. The situation has now worsened and, of the six we improved, at times we have only one vehicle operative, if all six are not in the repair shop," Mario Lopes stressed.

How Can We Overcome These Difficulties?

"How do we hope to overcome these difficulties?" we ask.

In response to this question, Mario Lopes advised that we are already assured help from SIDA of Sweden in the form of two cargo trucks which, good or bad, will be able to relieve the capital's streets somewhat of the accumulation of trash. The help is part of a project financed by the government and arranged by the Commissariat of Economic Coordination and Planning.

The heads of that service department have brought up the financial conditions of the state committee, whose limited income is not adequate to cover the operating expenses and labor requirements.

As a matter of fact, many people are calling attention to the lack of fuel and also to worker disinterest because of the delay in the payment of their wages as additional reasons for inadequate performance by the services of the state committee. We asked Mario Lopes about this. This is his answer:

"I should like to say that, although there are delays in the payment of wages due to our financial conditions, this is in no way an obstacle to the proper performance of the necessary tasks, since with each passing month we are making progress in that respect.

"With reference to fuels, we often use more than anticipated for one reason in particular. The vehicles are old and, in order for the drivers not to run the risk of having them break down in some unforeseen place, the drivers avoid shutting off the motors during loadings. Thus, fuel is wasted against our will to the point where we exceed the quantity anticipated."

The head of the fourth branch then approached the problem from the standpoint of lack of cooperation by the residents in not placing the refuse in cans in front of their residences.

Need To Adopt New Cleaning Method

"We need to adopt a completely new method, for what we were hoping to achieve was a rapid cleanup in the center of the city and then to expand to other thoroughfares of the outlying districts," stated Comrade Luis Antonio Lopes, one of the heads of the environmental cleanup departments of the fourth branch.

The comrade spoke of the implications of the accumulation of impurities in the city, their effect on public health; and he emphasized that we cannot speak in terms of sanitation in a city so long as our funds do not permit extending the cleanup operation to the suburbs.

Truthfully speaking, the cleanup operation has diminished (and this situation will drag out longer so long as there is a lack of vehicles), since currently, of the 11 areas of the city only three--in the center--ever see any of the garbage trucks and these, moreover, are not equipped with any mechanism to facilitate unloading.

Kill the Mangy Dogs With Clubs?

In addition to the problem of cleaning up the capital, there is another factor involved in the transmittal of diseases: mangy dogs. It seems that the increase in the number of sick, stray dogs in the streets is also a result of the failure to remove garbage, which is attracting these starving, miserable-looking creatures.

From a conversation with the heads of the cleanup department of the state committee, we learned that campaigns to round up the sick dogs are not being carried out because the veterinary clinics do not have the chemical product needed for the injections which will kill them, killing being the only solution.

This has always been the case with these animals whose condition constitutes a danger for public health. Others are thrown to the wolves of Pecuaria to be eaten. But the most curious aspect is that, according to the comrades of the state committee, no further attempt is being made to round them up, because the veterinary services suggested that the garbage men catch them and kill them with clubs. The garbage men refused to do this, as they considered such as act inhuman, killing in cold blood.

8568
CSO: 5000

KENYA

BRIEFS

U.S. DENIED WASTE DUMPING--The Kanyan Government has categorically denied having been approached by an American firm or company to allow it to dump its hazardous chemical waste and other toxic byproducts on Kenyan soil or coastal waters and the Kenyan Government would under no circumstances allow its soil to be used as dumping ground for any chemical waste, toxic or non-toxic. Reacting to an article carried by the WEEKLY REVIEW of 30 May this year, where Kenya, among other African countries, is referred to as having been allegedly approached by American firms to allow them to dump their toxic waste, the government said in a statement today that it was committed to the proper utilization of the environment. It said that the Kenya Government recognizes the various grave hazards emanating from the disposal of toxic wastes and that the WEEKLY REVIEW report was baseless. The government statement concluded that the creation of the national environment secretariat in 1974 and the formation of the Ministry of Environment and Natural Resources in 1979 are concrete evidence of the Kenya Government's commitment to prevent all forms of environmental pollution. [Text] [LD071150 Nairobi Domestic Service in English 1000 GMT 7 Aug 80 EA]

CSO: 5000

BRIEFS

RARE GAME PRESERVATION--A unique research project, aimed at saving rare game from extinction in the Territory's Kaokoland has gone into operation. Costing about R70,000, the project will cover the study of elephants, giraffe and the Black rhino in the semi-desert and the desert areas of the Kaokoland and it to be run over a period of three years, headed by Mr P J Viljoen of the Department of Zoology at the University of Pretoria. Mr P J Viljoen has already commenced with the project, which is being done under the auspices of the University's Eugene Marais Chair of Wildlife Management and funded by the SA Nature Foundation. Yesterday, the Advertiser spoke to Professor J du P Bothma of the University who said that the project was being done in cooperation with the Department of Nature Conservation in SWA. "I want to take this opportunity," he said "to thank the Department for their cooperation and assistance. Their collaboration is proving to be invaluable." Professor Bothma said that for the first two years of the project, field study would be carried out and the third year would be used for analyzing the findings. He pointed out that although the project would cover the whole area, study would be concentrated in the western party, where the ecology is being researched. Animals in that area had developed extraordinary characteristics to survive in an arid environment. "There are a number of controversial aspects to be researched, but it is much too early at this stage to comment on them," Professor Bothma said. [Text] [Windhoek THE WINDHOEK ADVERTISER in English 21 Aug 80 p 1]

CSO: 5000

CROP INSECTICIDE KILLING WILDLIFE IN CAPRIVI AREA

Johannesburg RAND DAILY MAIL in English 14 Aug 80 p 4

[Text]

AN AGRICULTURAL insecticide which has caused havoc with wildlife in the Caprivi area has evoked strong reaction among conservationists who have called on the Government to ban it.

In the latest bulletin of Endangered Wildlife Trust, Dr John Ledger, chairman of the trust's vulture study group, called for the insecticide to be banned.

The source of the insecticide, known as Curaterr, appears to be the Economic Development Corporation's agricultural project which has bought large quantities of it.

"Information has been received about ducks and other waterfowl being poisoned by the insecticide in the East Caprivi.

"The birds presumably dig up the maize seed after planting. Hundreds of paralysed birds are found in the maize lands and the locals collect them. It is only a matter of time before people get poisoned," he warned.

The information about the paralysed waterfowl seems to indicate Curaterr should not be used at all, even if adequate supervision could be assured. What happens if rain washes away a maize field just after planting and the Curaterr gets into our rivers?

"It is ridiculous that the Endangered Wildlife Trust should be spending thousands of rands on research to conserve vultures and then one or two misguided individuals can destroy more than 200 of the birds with the greatest of ease because they have access to a deadly poison," he said.

Dr Ledger is chairman of the vulture sub-committee of the International Council for Bird Preservation.

Conservation authorities throughout all maize-growing areas in Africa should be warned about the danger of Curaterr, he said.

In two separate incidents the insecticide has been used to poison carcasses that were then eaten by scavengers.

Near the Kwando River members of the South African Defence Force found a dead impala which had traces of a blue crystalline substance on it.

Around the impala were a dead lion, dead warthog and about 100 dead vultures. The blue crystals were identified as Curaterr.

In the second poisoning, Curaterr was applied to a dead elephant near Katima Mulilo. Six lions and about 150 vultures were found dead around the carcass.

CSO: 5000

UKASE ANNOUNCED ON AMENDMENT OF POLLUTION CONTROL

Moscow VEDOMOSTI VERKHOVNOGO SOVETA SOYUZA SOVETSKIKH SOTSIALISTICHESKIKH RESPUBLIK in Russian No 25, 19 Jun 80 pp 509-510

[Ukase of the Presidium of the RSFSR Supreme Soviet on the Incorporation of Amendments and Supplements to Article 223^1 of the RSFSR Criminal Code]

[Text] In accord with the Ukase of the Presidium of the USSR Supreme Soviet of 21 May 1980 "On the Incorporation of Amendments and Supplements to the Ukase of the Presidium of the USSR Supreme Soviet 'On Strengthening Liability for Polluting the Sea with Substances Harmful for Human Health or for Living Marine Resources'," the Presidium of the RSFSR Supreme Soviet decrees:

To incorporate the amendments and supplements in Article 223^1 of the RSFSR Criminal Code (VEDOMOST VERKHOVNOGO SOVETA RSFSR, 1974, No 29, Article 781), giving it the following wording:

"Article 223^1. The Polluting of the Seas with Substances Harmful for Human Life or for the Living Marine Resources, or by Other Wastes and Materials

"The illegal discharge of substances harmful to human life or to living marine resources or other wastes and materials which can harm recreational zones or impede the other legitimate types of utilization of the seas from vessels or other floating equipment, aircraft, platforms or other man-made structures in the sea for the purposes of burying within the inland marine and territorial waters of the USSR, and equally the illegal discharge of the designated wastes, materials and substances from Soviet vessels and other floating equipment, aircraft, platforms or other man-built structures in the sea for the purposes of burying in the open sea--

"Are to be punished by imprisonment for a period up to 1 year or by corrective labor for the same term, or by a fine of up to 10,000 rubles.

"The polluting of the inland marine and territorial waters of the USSR, as a consequence of the illegal discharge of substances in these waters from ships or other floating vessels, aircraft, platforms or other man-made structures in the sea, or as a consequence of the failure to take the necessary measures to prevent the escape of substances harmful for human health or for living marine resources, or mixtures containing such substances above the established standards, or other wastes and materials which can cause harm to recreational zones or impede other legal types of the utilization of the sea, and likewise the polluting of the waters of the open sea as a consequence of the illegal discharge of the designated substances, mixtures, wastes and materials from Soviet ships and other floating vessels, aircraft, platforms or other man-made structures in the sea or as a consequence of the failure to take the necessary measures to prevent the escape of these substances, in violation of the international treaties of the USSR--

"Are to be punished by imprisonment for a period up to 2 years, or by corrective labor for a term of up to 1 year, or by a penalty of up to 15,000 rubles.

"The actions provided for under the second part of the current article, in causing substantial harm to human health or the living marine resources, to recreational zones or the other legitimate types of the utilization of the seas--

"Are to be punished by imprisonment for up to 5 years or by a penalty of up to 25,000 rubles.

"The failure of the appropriate officials of ships or other floating vessels, aircraft, platforms or other man-made structures at sea to provide information to the administration of the nearest Soviet port, or in instances of discharging for burial purposes, to the organization issuing permits for discharging, concerning the discharge being prepared or permitted as a consequence of extreme necessity, or unpreventable escapes within the inland marine and territorial waters of the USSR of substances harmful to human health or to living maring resources, or mixtures containing such substances above the established standards, or other wastes and materials which can cause harm to recreational zones or impede the other legitimate types of utilization of the seas, and equally the failure to inform the administration of the nearest Soviet port, or in instances of discharging for burial purposes, the organization issuing permission for the discharge, on the part of the appropriate officials of Soviet ships or other floating vessels, aircraft, platforms or other man-made structures at sea of the discharge being prepared or carried out as a consequence of extreme necessity of the designated substances, mixtures, wastes and materials in the open sea--

"Is to be punished by corrective labor for a period up to 1 year or by a penalty up to 500 rubles."

Chairman of the Presidium of the RSFSR Supreme Soviet M. Yasnov
Secretary of the Presidium of the RSFSR Supreme Soviet Kh. Neshkov

Moscow, 11 June 1980

10272
CSO: 5000

ECONOMIC VIEW OF POLLUTION CONSEQUENCES

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 18 Jun 80 p 2

[Article by Doctor of Economic Sciences V. Shkatov and O. Burlyga: "You Contaminate -- You Pay"]

[Text] At the Rozdol Production Combine "Sera" there is a new air purification complex. Its construction cost 2 million rubles and in addition, the annual operating expenditures are 440,000 rubles. As we see, it is an expensive business. Are these expenditures justified? If we count all the advantages for the population, for agriculture and for community life and industry, the new complex at the "Sera" Combine prevents losses of 900,000 rubles a year. So we see that it is possible to compensate not only for the operational expenses, but even pay back the capital investments. The expenditures for preservation of the air basin are advantageous in virtually any case.

But here is a question: who specifically benefits? Due to the introduction of the new complex at the Rozdol Combine itself there is prevention of losses amounting to only 103,000 rubles annually. This does not even cover current expenses. The remaining gain for the combine is seemingly for others; it exerts not the slightest influence on the well-being of the Rozdol plant and its workers. But the expenditures on air purification are exceedingly significant and they reduce the profit, and as a result they can also reduce incentive. So there is a paradox: the people have done a good thing, for which they are penalized.

Now only those enterprises are economically interested in nature preservation measures which themselves receive a greater effect from them than the production expenditures. But this nevertheless is not the rule, but rather the exception. For example, in Moscow the lion's share of all harmful effluent is trapped, but only approximately an eighth of it is utilized, that is, reused in production. All the rest brings no income to the enterprises, although the population and the national economy as a whole gain a great deal. Or take the power industry. The purification of smoke only from sulfur dioxide increases the cost of electric power by ten or even 20%.

The cost will be still greater if all the harmful effluent is trapped. It is understandable that if the price of a kilowatt-hour remains constant the profit decreases.

How can one bring together the interests of individual enterprises and society as a whole? Is this possible in a particular case? We will assume: yes, it is possible, if you must pay for the discharge of contaminating substances. We emphasize: not fines, but specifically payment. The difference is very significant. In actuality, what is the mechanism of the effect of imposition of fines? Maximum admissible norms for the discharge of effluent are set for enterprises and organizations. If they do not conform to the norm they must pay. And if there is conformity? Then you can then sort of poison nature on a legitimate basis.

The payment which we propose should be introduced would be imposed at all times -- even when there is adherence to the maximum admissible norms for effluent. From this payment there should be compensation for the expenditures on renewal of the air basin. The size of the payments can be determined by ascertaining the losses inflicted on the national economy from effluent. For the time being there is no accurate method for calculating this loss, but science is seeking it. A method for determining the effectiveness of environmental preservation measures and losses from environmental contamination was prepared during the past year under the direction of a joint commission of the USSR Academy of Sciences and the State Committee on Science and Technology. Unfortunately, the document has not been approved. Accordingly, initially the magnitude of the proposed payment can be determined by using as a point of departure the cost of construction, starting-up and operation of the purification structures necessary for the enterprise in order to reduce effluent to the admissible level. Under all conditions the payment must exceed at least the current expenditures on operation of the purification structures.

Part of the proposed payments must be included in the cost of production, but it would be better to take the greater part from the profit remaining to the enterprise in order to stimulate a reduction of the effluent. These sums can be used in compensating for the losses in branches suffering from the guilty party and also on measures for preserving nature.

We have here mentioned the economic responsibility of enterprises. But there must also be a personal responsibility. In accordance with a recently introduced order, workers who do not ensure implementation of the plan and measures for preserving the environment and adherence to norms and rules will suffer a minimum reduction of one-quarter of any prize for the main results of economic activity. And until the planned measure is carried out, this deduction from the prize is kept. The condition is strict but just. However, in addition to penalizing negligent workers it is necessary to approve energetic workers for adherence to the effluent norms and for reducing it.

Accordingly, Article 21 of the draft of the law on preservation of atmospheric air, in our opinion, should read as follows: "By legislation of the USSR and the union republics measures are established for material stimulation on the basis of introduction of payments for the discharge of contaminating substances into the atmosphere, differentiated in dependence on the magnitude of the inflicted losses and provision made for purification structures, and also moral and material encouragement of the personnel of enterprises (combines), institutions and organizations..." And then -- as the text now reads.

5303
CSO: 5000

CHANGES ANNOUNCED IN PROVISIONS GOVERNING POLLUTION CASES

Moscow VEDOMOSTI VERKHOVNOGO SOVETA SOYUZA SOVETSKIKH SOTSIALISTICHESKIKH RESPUBLIK in Russian No 22, 28 May 80 pp 393-395

[Ukase of the Presidium of the USSR Supreme Soviet on the Incorporation of Amendments and Supplements to the Ukase of the Presidium of the USSR Supreme Soviet "On Strengthening Liability for the Pollution of the Seas by Substances Harmful for Human Life or for Living Marine Resources"]

[Text] The Presidium of the USSR Supreme Soviet decrees:

I. In line with ratification by the USSR of the Convention to Prevent Pollution of the Seas by the Discharging of Wastes and Other Materials, to incorporate in the Ukase of the Presidium of the USSR Supreme Soviet of 26 February 1974 "On Strengthening Liability for the Pollution of the Seas by Substances Harmful for Human Health and for Living Marine Resources" (VEDOMOSTI VERKHOVNOGO SOVETA SSSR, 1974, No 10, Article 161), the following amendments and supplements:

1. The name of the Ukase is to be given in the following manner: "On Strengthening Liability for the Pollution of the Seas by Substances Harmful for Human Health or for Living Marine Resources or by Other Wastes and Materials."

2. The preamble of the Ukase, after the words "for living marine resources" is to be supplemented by the words "or by other wastes and materials."

3. To supplement the Ukase with a new article numbered 1, with the following wording:

"1. To establish that the illegal discharge of substances harmful for human life or for living marine resources, or other wastes and materials which can cause harm to recreational zones or impede other legitimate types of the utilization of the seas from ships and other floating vessels, aircraft, platforms or other man-made structures in the sea for the purposes of burying within the inland marine and territorial waters of the USSR, and equally the illegal discharging of the designated substances, wastes and materials from Soviet ships and other floating vessels, aircraft, platforms or other man-made structures in the sea for the purposes of burial in the open sea, are to be punished by imprisonment for a period up to 1 year, or by corrective labor for the same period, or by a penalty up to 10,000 rubles."

4. Article 1 of the Ukase is to be considered Article 1[1], giving it the following wording:

"1[1]. To establish that the polluting of the inland marine and territorial waters of the USSR, as a consequence of the illegal discharging of substances harmful for human life or for living marine resources, or mixtures containing such substances above the established standards or other wastes and materials which can harm recreational zones or impede other legitimate types of utilization of the seas in these waters from ships or other floating vessels, aircraft, platforms or other man-made structures in the sea or the failure to take the necessary measures to prevent the escape of these same substances, and equally the polluting of the waters of the open seas, as a consequence of the illegal discharge of the substances, mixtures, wastes and materials from Soviet ships or other floating vessels, aircraft, platforms or other man-made structures in the sea or the failure to take the necessary measures to prevent their escape, in violation of the international treaties of the USSR, are punished by imprisonment for a term up to 2 years, or by corrective labor for a period of up to 1 year, or by a fine up to 15,000 rubles.

"The same actions causing substantial harm to human life or to living marine resources, to recreational zones or other legitimate types of the utilization of the seas are punished by imprisonment for up to 5 years or by a fine up to 25,000 rubles."

5. Article 2 of the Ukase is to have the following wording:

"2. To establish that the failure of the appropriate officials of ships or other floating vessels, aircraft, platforms or other man-made structures in the sea to inform the administration of the nearest Soviet port, or in instances of discharging substances for the purposes of burial, the organization granting permission for the discharge, of the discharge being prepared or carried out as a consequence of extreme necessity or the inescapable losses within inland marine and territorial waters of the USSR of substances harmful for human health or for living marine resources, or mixtures containing such substances above the established standards, or other wastes and materials which can harm recreational zones or impede the other legitimate types of utilization of the seas, and equally the failure to inform the administration of the nearest Soviet port, and in instances of a discharge for the purposes of burial, the organization granting permission for the discharge, by the corresponding officials of Soviet ships or aircraft, platforms or other man-made structures in the sea of the discharge being prepared or carried out as a consequence cf extreme necessity of the designated substances, mixtures, wastes and materials in the open sea are to be punished by corrective labor for a period of up to 1 year or by a penalty up to 500 rubles."

II. To instruct the presidiums of the Union republic supreme soviets to bring the Union republic legislation into accord with the current Ukase.

Chairman of the Presidium of the USSR Supreme Soviet L. Brezhnev
Secretary of the Presidium of the USSR Supreme Soviet M. Georgadze

Moscow, the Kremlin, 21 May 1980
No 2136-Kh.

10272
CSO: 5000

BURIAL OF CHEMICAL WASTE DISCUSSED

Minsk PROMYSHLENNOST' BELORUSSII in Russian No 5, May 80 p 75

[Article by Doctor of Geological-Mineralogical Sciences A. Kudel'skiy and Candidate of Technical Sciences V. Yermolenko: "On the Ground or Underground?"]

[Text] The chemical industry is one of the most rapidly developing branches of the national economy in our republic. For example, in the Tenth Five-Year Plan alone the output of the chemical and petrochemical industry will double. The Fourth Soligorskiy Potassium Plant, the largest in the Starobinskoye Deposit, the Grodno synthetic fiber plant, the Zhlobin artificial fur plant and other enterprises have become operative. All this cannot but give pleasure. Unfortunately, the increase in the scales of chemical production has considerably aggravated the problem of conserving water resources. How is it to be solved?

The biological purification method is used at almost all chemical enterprises in the republic. It is characterized by simplicity of apparatus employed and relatively low operational expenditures. At the same time, it requires rather considerable capital investments and does not always ensure purification of wastes at the level of sanitary-hygienic standards and specifications. In a number of foreign countries (United States, West Germany, East Germany, France, Czechoslovakia, Romania) and at some enterprises in our country the idea has been advanced of burial of industrial fluid waste in deep-lying horizons. Is this method acceptable for our republic?

The Upper Proterozoic complex of rock layers is the most promising for the underground burial of industrial wastes within the Pripyatskaya depression. Its possibilities for these purposes are evident and unquestioned. However, the solution of this problem in each specific case requires the most detailed validation. It is necessary to take into account such factors as the ecological compatability of the industrial wastes and the environment (collector); capital investments on their complete purification or expenditures on storage of such wastes in surface water bodies with a corresponding effect on the environment (ecological damage); possibility and economic feasibility of individual components present in industrial waste (arsenic, zinc, cobalt, cadmium, radioactive elements, etc.) for practical use prior to their postulated discharge underground.

In solving problems relating to the underground discharge of industrial waste it is also necessary to bear in mind that the parameters of the collector properties of rocks under natural bedding conditions are considerably greater than those which are obtained in laboratory tests of the core. It must also be noted that the geological-hydrogeological study of the territory of Belorussia is still inadequate. Specifically for this reason at the present time the conclusion that individual strata in the Pripyatskaya depression are promising for the purpose of underground burial of wastes is based on a whole series of assumptions and postulates.

However, these problems are extremely timely and they must be solved without delay. The rates of growth of industrial production are increasing from year to year. New enterprises and industrial branches are appearing and requirements on quality of the environment are increasing. In the next few years the working of brown coal deposits will be initiated in our republic. Exploitation of the Petrikovskoye deposit of potassium salts will soon begin. Plans also call for the industrial exploitation of the Turovskoye and Lyubanskoye deposits of combustible shale. There can be production of metallic minerals by geotechnological (shaftless) methods and also extraction of a whole series of mineral components (strontium, iodine, bromine, etc.) from ground water. Probably new chemical industry enterprises will also appear. In other words, the underground discharge of industrial liquid wastes into deep-lying horizons of the earth will become an objective necessity, and later a reality. The underground burial of industrial wastes in comparison with their accumulation in surface containers is extremely effective. For example, under the conditions prevailing at the "Belaruskaliy" Production Combine the annual pumping of 2.5 million cubic meters of liquid wastes (brines) into the deep layers will ensure, according to our computations, the economic effect (profit) amounting to 2.5-3 million rubles. However, the accumulation of industrial wastes at the earth's surface will inflict a considerable ecological loss (0.3-0.5 ruble per cubic meter) and will require more than 1 ruble per cubic meter annual operating expenditures.

Due to the inevitability of use of the underground horizons of the republic for the underground discharge of industrial wastes over a long period, even now it is necessary to initiate thorough investigations of this problem not only under the conditions prevailing in the Pripyatskaya depression, but in the Orshanskaya and Brestskaya depressions as well.

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5303
CSO: 5000

IMPORTANCE OF GREEN PLANTINGS FOR YEREVAN

Yerevan KOMMUNIST in Russian 4 Jul 80 p 2

[Article by Zh. Tarasova, Chief of the Operations Division of the "Yergorzelenstroy" Production Administration: "Salt River"]

[Text] Any city resident knows how important green plantings are for the sanitary-hygienic state of a city and for health of the population. The importance of green plantings is difficult to overestimate for Yerevan with its dry climate and high solar radiation, with a great number of industrial enterprises and heavy traffic. However, the cultivation of trees and shrubs in our city, and especially the rarer species, involves considerable difficulties and material expenditures.

During recent years, as was noted in a recently published decree of the Council of Ministers Armenian SSR, considerable work has been done in the city on greenification of urban areas and specific measures have been taken in the field of improving maintenance of green plantings. We can add to this that new parks and boulevards have appeared in the capital of the republic and these have become places for the mass recreation of the workers.

Kol'tsevoy Boulevard is rightfully considered one of such places. It was beautifully planned and has more than a few rare decorative species of trees and shrubs. These include Crimean pine, red cedar, chestnutleaf oak, Bolle's poplar, Van Gutta spiraea, and silver Colorado spruce. They require constant care, in particular, precise watering.

Unfortunately, the workers who care for this greenery must deal with a thoughtless attitude toward the green plantings and must expend much effort in overcoming artificially created noise. Take Kol'tsevoy Boulevard, for example. Now we have a situation in which the plantings in the third, fourth and fifth segments of the boulevard (from the Zooveterinary Institute to the monument to Vardan Mamikonyan) are under the threat of destruction.

In these segments watering is with water from the Gedar River -- one of the two water arteries in the city. In accordance with the approved water use plan, 350 liters of water per second are drawn from the Gedar channel for watering purposes.

And during recent years there have been cases of the death of green plantings watered by the waters of the Gedar. How did this happen? The reason is that over a period of years saline waste waters have been dumped into the Gedar from the Avanskiy salt mine. They cause a progressive salinization of the soil in the watered sectors by sodium and chlorine ions, an excess of which has a destructive influence on trees and shrubs and flowers. These are poisoned, their capacity for the assimilation of soil nutrients is reduced, the leaves receive burns and lose their capacity for photosynthesis, the plants become exhausted, and finally die. The first to die are those which have a poor resistance to salt: horse chestnut, oriental plane tree, Colorado spruce, Crimean pine and decorative shrubs (spiraea, Japanese quince, red dogwood, privet, lilac).

The workers of "Yergorzelenstroy" have repeatedly called on the directors of the salt works, in particular, the director Sh. Minasyan, with requests to cease violation of the laws on preservation of the environment, but this has not been crowned with success. There has been no implementation of the resolution of the Executive Committee of the Yerevan City Soviet by the directors of the enterprise (resolution No 446, dated 13 August 1979, categorically forbidding contamination of the waters of the Gedar, including by industrial wastes).

The administration of the salt works has behaved stubbornly, worthy of the best tradition, endeavoring to find at least some loophole for justifying their actions. They are trying to draw sanitary doctors into this unseemly matter, striving to demonstrate that the waters of the Gedar, being, they say, unfavorable in sanitary respects, cannot be used for watering. The matter of the dumping of saline water into the river channel is either shamelessly avoided or is pushed to the background, as if it is of no fundamental significance in the dispute between "Yergorzelenstroy" and the salt works.

During the past year the "Yergorzelenstroy" Production Administration has been forced to bring suit against the salt works for compensation for the losses inflicted on the plantings on Kol'tsevoy Boulevard during only one watering season in the amount of 17,000 rubles. But even this has not sobered the violators of the legislation. This year, in the fifth segment of Kol'tsevoy Boulevard, 65 adult plane trees, 110 Lombardy poplars, 21 willows, 10 Chinese elms, 65 pines, 22 oaks, 55 Colorado spruces and 965 shrubs have already perished after having been impregnated with saline water. For the time being Bolle's poplar and red cedar are stable. However, as the years pass the depth of penetration of the salt into the soil is increasing and its concentration is becoming greater.

In our country the preservation of the environment is a matter of national importance. Adherence to the law of preservation of the purity of the water, soil and air is mandatory for each citizen and a sacred duty of the director of any enterprise. Its violation should be punished with all severity. It goes without saying that these truths are well known to the directors of the salt works. It must be assumed that they are known to the group for the national monitoring of the enterprise, which for some reason or another is blinking at violation of the law.

In the above-mentioned decree of the Council of Ministers Armenian SSR on the further development and improvement of green plantings in Yerevan, the following figure is cited: the area of the general-use green plantings per inhabitant of the capital of the republic is 12 square meters, which is less than the minimum set by the norms.

The government of the republic has defined measures for the radical improvement of the green plantings and their composition. The objective has been set of ensuring an annual increase in general-use urban green plantings of not less than 120 hectares, devoting special attention to greenification of the central part of the city and industrial areas. The executive committee of the city soviet has been designated to exert leadership and assistance in care and maintenance of sectors of green plantings by enterprises and institutions.

In the light of what has been said, the position of the other managers exhibiting an indifferent attitude toward such an important problem as greenification of the city seems all the more desperate.

So, the state arbitration board has recently settled the suit brought by "Yergorzelenstroy" against the Avanskiy salt works. It remains to hope that the compensation for the inflicted loss will come from the resources of the enterprise, and will not come from the pockets of those persons who have already suffered from the Gedar being transformed into a salt river.

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USSR

EDITORIAL ON ENVIRONMENTAL CONCERNS OF SOVIET STATE

Kiev PRAVDA UKRAINY in Russian 17 Jul 80 p 1

[Editorial]

[Text] A memorial plaque is mounted on the facade of the railroad station Nikitovka in Donetskaya Oblast. It was placed there in honor of the man who a hundred years ago made the first shelterbelts in Russia for protecting railroads against the caprices of the weather. This was the forest engineer Nikolay Kirillovich Sredinskiy, who developed agricultural techniques for the growing of forests in the arid Donets steppes, the structure of long-lived plantings.

Foresters of several generations have continued the work begun by Sredinskiy. Shelterbelts have now been extended along the Donetskaya Railroad for a distance of 3,500 km. They occupy a total of more than 17,000 hectares, which is four times greater than the well-known Velikoanadol'skoye forest planting -- the standard of artificial forestation in the Donbass. Such green plantings not only perform service in protecting the railroad, but also have imparted an incomparable beauty to the Donets expanses and have exerted a favorable influence on the climate of the mining region.

More than a hundred rare species of trees and shrubs have been planted on the grounds of the Odessa Bread Factory No 4. Among these are Japanese cryptomeria, Manchurian aralia, incense cedar and magnolia. Green plantings have become reliable guardians of air purity. The microbiologists, botanists and soil scientists of the botanical garden at Odessa State University have established constant observations of parks situated in the territories of the local enterprises "Pressmash," "Kislorodmash," "Odesskabel'" and others. Specialists are investigating the ecological conditions in factory yards and in closed spaces, are creating green refuges for rest and are selecting plants for favoring normalization of microclimate. Scientists are striving to provide factory specialists with scientifically sound recommendations on sanitizing of the environment. The Soviet people are creating factory gardens and city gardens...

Comrade L. I. Brezhnev, General Secretary of the Central Committee CPSU, in a report at the 25th Congress CPSU, cited the sum of centralized capital investments on preservation of the environment during the Tenth Five-Year

Plan -- 11 billion rubles.

Now, in making preparations for the 26th Congress CPSU, the Soviet people with pride are looking back at the route along which they have come. Our achievements in the rational use and preservation of natural wealth are directly related to successes in the field of economics and culture. Enormous sums are being expended on the construction of gas-purification and dust-collecting apparatus, water-purification structures, on the monitoring of the state of the environment and its resources. Sanitary-protective and green zones are being created in the cities; centralized heat supply is being used more and more widely on the basis of powerful thermoelectric power stations. Measures are also being taken for improving the technical servicing of automobiles and trucks and outfitting motor pools with modern diagnostic equipment. In our country measures for the preservation of nature have become a component part of national plans. At this time of mature, well-developed socialism concern about the state of the environment has found its reflection in the Constitution of the USSR.

A new indication of the constant concern of the Communist Party and the Soviet state about the caring concern for the environment are the laws recently adopted by the USSR Supreme Soviet concerning the safeguarding of atmospheric air and on preservation and use of the animal world. The adoption of the new laws for the safeguarding of nature was preceded by their broad discussion at meetings of groups of workers, at sessions of executive committees and permanent commissions, at meetings of rayon, city, rural and settlement Soviets of People's Deputies.

In the USSR law on the safeguarding of atmospheric air it is emphasized that in the siting, planning, construction and start-up of new and reconstructed enterprises, structures and other facilities, in the improving of existing and introduction of new technological processes and equipment it is necessary to ensure adherence to the norms relating to harmful effects on atmospheric air. All these requirements must also be taken into account in the planning and development of cities and populated places.

In our republic much experience has been accumulated in the struggle for purity of the air basin. Much work in this direction is being carried out in Dnepropetrovskaya and Voroshilovgradskaya Oblasts and the public is taking an active part. And so it is in most oblasts.

However, there are still cases of nonadherence to the legislation relating to the preservation of nature. For example, the "Azot" production combine is responsible for the annihilation of more than 30 hectares of forest in the Rovno green zone. The land use specialists in Galichskiy Rayon in Ivano-Frankovskaya Oblast wiped out about 50 hectares of plantings. During the last four years 20 hectares of new general-use plantings have been created at Kirovograd. But during this time 10 hectares were devastated. It is impossible to be content with this situation.

In the USSR law on the preservation and use of the animal world great attention is devoted to problems relating to the preservation of the environment of wild animals, the conditions for their multiplication and migration paths. Rare and disappearing species of fauna are being put under special protection.

Here it is fitting to mention the following. During the years of Soviet rule in our country not a single species has completely disappeared. And some have even have been regenerated, as, for example, the bison. Scientists assert that after the Second World War only 48 bison remained on the earth but now in the Soviet Union there are more than 400 of these rare animals.

The USSR law on preservation and use of the animal world imposes high requirements on enterprises, kolkhoz and sovkhoz establishments with respect to ensuring the preservation of animals when agricultural, logging and other such work is done. These same requirements are applied to an equal degree to transport enterprises.

The ministries and departments of the republic and local Soviets of People's Deputies must solve many serious problems of an economic and organizational character associated with the realization of the requirements in the new laws. Each tree, each water body, grove along the road and green lawn on the grounds of a factory must be cared for both for ourselves and for the generations which follow us.

We are rightfully proud of the incomparable beauty of the nature in our republic. Our common concern is care for and multiplication of these natural treasures.

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USSR

BRIEFS

MUD VOLCANO ERUPTION IN CASPIAN -- A radiogram from aboard the steamer "Sovetskiy Kazakhstan," making an ordinary voyage from Baku to Krasnovodsk, reported a strong eruption of a mud volcano near Livanov Bank in the Caspian. For several minutes an enormous column of rocks, ejected from the earth's deep layers, rose up over the sea. An appreciable increase in air temperature was noted at this time. Mud volcanoes are not rare for the Caspian, but for the first time, as specialists assume, the eruption was observed in an area of the sea where the depth exceeds a hundred meters. The new region of volcanic activity is of interest to specialists of the Geology Institute Azerbaydzhan Academy of Sciences imeni Gubkin. And this is not without reason — mud volcanoes are indicators of petroleum and gas deposits. This hypothesis has already found confirmation on the islands and banks of the Caspian. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 15 Mar 80 p 4] 5303

AVALANCHE IN CAUCASUS -- Spring has brought a very heavy snowfall to the Central Caucasus. But that which happened not far from Buron settlement in Alagirskoye Canyon could not be foreseen even by oldtimers. Late in the evening a gigantic avalanche of snow, rock and clay with a width of 300 meters and a height of 30 meters suddenly became detached from the high ledges of the canyon and roared into the Ardon River. Along its path the avalanche carried along the metal supports of a 110-KV electric transmission line. The workers on the highway running from Northern Osetia through the Main Caucasus Range into adjacent Georgia remained without electric power. The transmission of power to the construction site of the Zaramagskaya Hydroelectric Power Station also ceased. Thousands of inhabitants of mountain villages, visitors at tourist bases and alpine camps were cut off from the "rest of the world." The tunnelers of the brigade of B. Mamtsemlidze from tunnel detachment No 15 of the "Tbiltonnel'stroy" trust were the first to arrive at the scene. The experienced masters A. Gagloyev, A. Gorkovchenko, U. Zanklishvili and T. Khuchua at nighttime, with the light of searchlights, drilled shot holes on the vertical walls of the canyon and pounded anchor bolts in them for the attachment of cable lines.

Workers of the electric transmission line service hastened to the avalanche site. The brigade headed by I. Shklyar extended steel cables across the canyon and attached them in the cliffs for the suspension of wires. Under a pouring rain the experienced specialists I. Chernov, Z. Yumayev, V. Sidel'nikov and V. Nikitchenko restored the electric line. The consequences of the calamity have been eliminated. Work has now been resumed vigorously at the construction sites of the Transcaucasian Highway and at the Zaramagskaya Hydroelectric Power Station. [Text][Moscow PRAVDA in Russian 4 May 80 p 6] 5303

OPERATIONS OF LENINGRAD AERATION STATION -- The first stage of the very large Leningrad aeration station has now reached its planned productivity. Here, on Belyy Island, washed by the waters of the Neva at its mouth, every day more than 750,000 cubic meters of sewage from the great industrial city undergo purification. Over the Neva channel, where the purified water is dumped into the gulf, scream flying seagulls who are hunting for the small fish which always congregate here. This means that the useful microorganisms, which do the main work on the purification of wastes at the station, have done their work well. This waste, which arrives at the station through the main city sewer system, is transformed into transparent moisture which travels a half-kilometer through a mechanical purification screen, settling tanks and other apparatuses and installations. The discharged water meets the most rigorous sanitary specifications. P. Gorbunov, station chief, states: "However difficult it was to master the station equipment, it was most difficult of all to 'force' the microorganisms to get down to work more rapidly. In order to start up the complex four months ahead of time, even in winter we carefully 'fed' this so-called active silt, generously supplying oxygen until we had a population adequate for uninterrupted operations. One of the purposes of the complex plan for economic and social development of Leningrad is the complete cessation of the dumping of unpurified city wastes into the sea. For this purpose hundreds of purification structures have been activated at large enterprises and systems for circulating water supply are being introduced. New citywide aeration stations are being constructed. After the starting-up of the second stage of the complex on Belyy Island similar structures will begin to operate on the north and south shores of the Gulf of Finland. [Text] [Moscow SOTSIALISTICKESKAYA INDUSTRIYA in Russian 25 May 80 p 2] 5303

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POLLUTION MEASURING INSTRUMENTS OFFERED TO ATHENS MUNICIPALITY

Athens ELEVTHEROTYPIA in Greek 1 Aug 80 p 3

[Article by M. Neofotistou]

[Text] The municipality of Athens is establishing a Center for Toxicological and Ecological Research, which will have gas chromatographs, separation collectors, and perhaps even a mass spectrometer, and in general equipment of every sort. These instruments, whose value will be on the order of a few million drachmas, will be offered by the Institute for Ecological Chemistry of Munich and will be operated by Greek scientists.

This center will be ready to function in a few months. The Environmental Committee of the municipality took the initiative for its establishment, especially Dr Milt. Anagnostopoulos, who lived in West Germany for 22 years and used to study and serve in association with the director of the Institute for Ecological Chemistry of the University of Munich, Mr (Korte).

It was for the purpose of setting up this center that Prof (Vitendselner), general director of the Environmental Association under Bonn's Ministry for Research and Technology, had come to Athens in March and Prof (Korte) had come here in May.

(Korte) met with the mayor of Athens, D. Beis, and discussed with him the possibilities of cooperation between the laboratory which he heads and the municipality of Athens. According to reliable reports, Prof (Korte) is eager to communicate his experience in what concerns ways of dealing with environmental problems which have been used by the municipality of Munich.

The Procedures Are a "Little" Different

A "slight" difference in the ways and possibilities of dealing with environmentological problems exists, of course, between the municipalities of Munich and Athens, and this difference ought to be properly examined. For example:

The municipality of Munich--as well as generally all the municipalities and communities of the developed countries--surveys by itself the problems of pollution in its area and investigates on its own the repercussions which this pollution has on public health. And on its own it draws up economical-technical studies and monitors the whole gamut of factory operations. If it encounters pollution, it has the right to impose measures, in the certainty that this or that factory will comply with these measures.

However, the municipality of Athens and local self-government in our country in general has no other jurisdictions than the removal of garbage and the management of the graves at the cemeteries. Nor does it receive appropriations from the State budget sufficient to place it, if not on the same level, at least on a level comparable to the levels enjoyed by the municipalities of other countries.

At this time, the use of pesticides in Greece is creating a tremendous problem with serious ramifications for the health of the people and also for the national economy. Thus, the Center for Toxicology and Ecological Research intends to place great weight not only on matters of ecological chemistry but above all on the cycle of pesticides and detergents in plant and other living organisms. That is:

It will be concerned with investigating pollution above all from the pesticides, detergents, and toxic substances of industry. Specifically, after isolating the pollutant, which it will determine itself or receive information about from appropriate agencies, it will be able to apply it to experimental animals. The ultimate objective will be to determine how much this pollutant affects the functioning of the human organism (in the respiratory and cardiovascular systems, and so forth) and what alterations, if any, it causes to the tissues.

Surveying Pollution in Athens

Another preoccupation of the center being established will be to make a survey of the pollution in the Athens area and to study measures which must be taken. Special emphasis will be given initially to pollution from lead and the repercussions on the public health caused by this pollution. The research on lead will be done in cooperation with the Directorate of Physics of the Dimokritos Nuclear Research Center.

At the same time, through all the activities of the center the aim will be to inform the people on matters of environmental pollution and to make the public aware of this problem.

To be sure, an institutional regulating will be striven for, of course, so as to allow local self-government to participate actively in solving environmentological problems.

The issues which have come to the fore are:

A study on the relationship between keeping automobile engines in good repair and pollution.

A recommendation by the Municipal Council that the Ministry of Education be invited to take part in the programs of cultural activity in the schools, and that the pupils in the gymnasia and lycea visit the Athens Cultural Center in order to attend events having to do with the environment and the development of an environmentological awareness.

It is worth noting that the Environmental Committee of the municipality of Athens is made up of esteemed scientists, such as Anagnostopoulos and Geroukalis. These people have undertaken also the negotiations with the appropriate agencies of West Germany for the establishment and operation in Athens of the Center for Toxicological and Ecological Research.

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ERRATUM

In JPRS 76247 19 August 1980, No 265 of this series in article entitled BIOLOGICAL EFFECTS OF NON-IONIZING ELECTROMAGNETIC RADIATION, pp 34-98, the authors and article titles were inadvertently dropped from the related articles. Please insert following information on pages indicated:

on page 34 under subhead "Bio-electromagnetic Research," insert [Article by Paolo Bernardi, Istituto de Elettronica, Universita di Roma, and Guglielmo D'Ambrosio, Istituto Elettrotecnico, Universita di Napoli: "Bio-electromagnetic Research: Review of Some Important Aspects"]

on page 43 under subhead "Electronically-shielded Enclosure Hazards" change subhead to read "Electrically-shielded Enclosure Hazards," and insert [Article by Paolo Bernardi, Guglielmo D'Inzeo, Franco Giannini, Roberto Sorrentino, Istituto de Elettronica, Universita di Roma: "Quantifying the Hazard of Field-Man Interaction in Electrically Shielded Enclosures"]

on page 50 under subhead "Potentially-Polluting RF Sources," insert [Article by Marco G. Bini, Amleto Ignesti, Luigi Millanta, Nicola Rubino, Riccardo Vanni, Istituto di Ricerca Sulle Onde Elettromagnetiche del C.N.R., Firenze: "A Comparative Analysis of the Various Potentially Polluting RF Sources"]

on page 60 under subhead "Electromagnetic Compatability, Noise Pollution," insert [Article by Claudio Egidi, of Istituto Elettrotecnico Nazionale Galileo Ferraris, Torino, Centro di Studio per la Televisione del CNR, Torino, and Istituto di Elettronica e Telecomunicazioni, Politecnico di Torino: "Electromagnetic Compatability (EMC) Today: A Review (1979-80)"]

on page 68 under subhead "Radio, TV Broadcasting Hazards," insert [Article by Guido Lari, of Rai-Radiotelevisione Italiana, Roma: "Problems Concerning the Surroundings of Sound and TV Broadcasting Stations"]

on page 71 under subhead "Electromagnetic Field Radiation Measurements," insert [Article by Luciano Bolla, Giuseppe Gerbi, of Aeritalia, Settore Avionica, Torino: "An Electric and Magnetic Field Meter"] on page 76 under subhead "Electromagnetic Reverberating Enclosure Measurements," insert [Article by Paolo Corona, of Isituto Universitario Navale, Napoli: "Electromagnetic Reverberating Enclosures: Behavior and Applications"]

on page 82 under subhead "Field, Power Intensity Calibrations," insert [Article by Michele Borsero, Luciano Brunetti, Pier Giorgio Galliano, of Istituto Elettrotecnico Nazionale Galileo Ferraris, Torino: "International Calibration Cycles of Field Intensity and Power Density"]

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